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March 14, 1957

To: WRSP(1)

WRSP(2)

WRSP(3)

Info: Headquarters

25X1A

From [redacted]

SAPC 14022
COPY 1 OF 1

TAPE ALIGNMENT - SYSTEM 1

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The following is the tape alignment procedure requested by [redacted]

Tape guide roller MP10182, use black oxide washer on bottom of roller. Shim the top with black oxide washer and laminated brass washer.

Loop arm assembly. Use standard AN960-2 and AN960-2L on the bottom of the roller; AN960-2L on top.

MP-10036 (small guide roller transition assembly). Use black oxide washer on bottom. Shim top with black oxide washer and laminated brass washer.

All washers used on the bottom side of rollers should be countersunk by hand. (Use small countersink, Schrill No. 1012 3/8-82-1/2.) This is for the purpose of removing burrs.

Washers should be sanded to remove all burrs. While aligning tape, the large roller on the transition assembly should be left off. After the tape is aligned, this roller can be replaced. Shim this roller with laminated washer on the bottom so that the roller does not move the tape up or down when it is running.

Make sure the tape passes over the full face of heads. Align the tape guide pins at each end of the head assembly so that the tape does not feather on top or bottom.

When the tape is running through the head assembly, the jam roller can be pulled away to see if the tape moves up or down against the guide pins. If the tape moves up or down with the jam roller disengaged, then the heads are not set straight. (All faces should be parallel with each other and not tilted up or down.)

If the tape does not hit top or bottom when the jam roller is disengaged, then the jam roller can be engaged to see if the tape hits top or bottom. If the tape hits the bottom, then the arm on the right side must be shimmed down. If the tape hits the top, then the arm must be shimmed up. Even a slight arm movement makes a big difference in how the tape moves up or down.

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SPURIOUS RESPONSES - SYSTEM 3

Improvements are continually being made in regard to the spurious response problem of System 3. Of more direct concern is the effect which the spurious response has on the level of sensitivity at which lock-on occurs. The tendency has been to leave an established lock-on sensitivity of 10 microvolts input while cleaning up the spurs so that there is less and less tendency for stuttering during scan due to incipient lock-on - to the extent that the last two systems were almost entirely clean of any evidence of stuttering during scan.

During recent discussions with [redacted] we have agreed to increase the sensitivity by accepting a certain degree of stuttering caused by incipient lock-on. Jim requested that we inform field personnel that sensitivity should be adjusted in the field, on an individual receiver basis if necessary, so that maximum sensitivity consistent with avoiding complete self-locking of the receiver will be obtained. The method of adjusting the gain has been to change the magnitude of the second local oscillator injection voltage or the magnitude of the third local oscillator injection voltage. This is accomplished by placing a shunting capacitor across either local oscillator injection lead at the printed board connectors on the main plate. The value of these shunting capacitors generally lies between 15 to 45 micro-microfarads. This shunting capacitance should be decreased until the sensitivity increases sufficiently to cause the receiver to lock on a spur with no signal input. The shunting capacitance should then be increased to allow the receiver to scan with a minimum margin of safety from locking on spurious signals.

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The following suggestions are offered as a means of minimizing spurious responses:

1. Inspect the coaxial cable on the 05 board that is connected from V1805 to Z1813. The shield of this cable should be grounded at the end nearest V1805. All other coaxial cables should be grounded at both ends.
2. The first local oscillator must be accurately tuned.
3. By-pass the 6.3 volts source on the 02A board with a 270 μμf capacitor connected to one end of L202 nearest the voltage source and the ground eyelet adjacent to V201.
4. On the 02A board, connect a 330 μμf capacitor from the junction of R202 and R201 to the filament eyelet adjacent to C201.
5. On the plug J903 of the 02A board, by-pass pin F to the ground bracket with a 39 μμf capacitor.
6. Adjust a shunting capacitor across the third local oscillator injection lead using the procedure outlined in a preceding paragraph.

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These procedures will eliminate many of the spurious responses. In most cases there will be additional spurious responses that are peculiar to each particular receiver. It is generally a question of overall channel gains. Since these vary from receiver to receiver, the outlined method may have to be repeated when the boards are changed from one receiver to another. The remaining spurious responses must be tracked down on an individual basis and are usually different for each receiver. There is no standard method for eliminating the peculiar spurious responses.

TUNING PROCEDURE - SYSTEM 3

You also requested a tuning procedure when boards are replaced in the System 3 receiver. This is a more complex process and is not easily defined in a step-by-step procedure. Instructions for this tuning procedure are being prepared and should be mailed within the next two weeks.

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[redacted]

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